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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,449	08/14/2001	Mitsuru Kondo	2001-1086A	8131

513 7590 10/23/2002

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EXAMINER

MARTIR, LILYBETT

ART UNIT

PAPER NUMBER

2855

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/928,449

Applicant(s)

KONDO ET AL.

Examiner

Lilybett Martir

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 14-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14-19 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (JP 63313007) in view of Itoh et al. (Pat. 4,112,746).

Matsuda et al. teaches the claimed invention, including:

- Providing a plurality of marks as in elements 2 and 3 on a rotational surface as in element 1 such that at least one of the marks is inclined relative to an axial direction of the rotary shaft as noted in Figure 1; providing at least one sensor as are elements 4 and 5 opposite to the rotational surface of the rotary shaft 1, the at least one sensor being operable to generate pulses when the marks pass the sensor during rotation of the rotary shaft (See Constitution); and measuring the axial elongation of the rotary shaft (See Purpose), as in claim 14.
- The plurality of marks comprising a reference mark as in element 3 and a measuring mark as in element 2, as in claims 15 and 30.
- The at least one sensor being fixed as are elements 4 and 5, as in claims 16 and 31.

- The sensors 4 and 5 comprising a plurality of sensors corresponding respectively to the plurality of marks as in elements 2 and 3 as noted in Figure 1, as in claims 17 and 32.
- A plurality of marks as in elements 2 and 3 on a rotational surface as in element 1 such that at least one of the marks is inclined relative to an axial direction of the rotary shaft as noted in Figure 1; at least one sensor as are elements 4 and 5 opposite to the rotational surface of the rotary shaft 1, the at least one sensor being operable to generate pulses when the marks pass the sensor during rotation of the rotary shaft (See Constitution); and a data processing part as in element 7 for determining the axial elongation of the rotary shaft (See Purpose), as in claim 18.
- The plurality of marks comprising a reference mark as in element 3 and a measuring mark as in element 2, as in claim 19.

But he does not disclose:

- Measuring or determining the axial elongation of the rotary shaft from a change in an interval ratio of the pulses generated by the at least one sensor, as in claims 14 and 18.
- Said marks provided such that an interval between them in a circumferential direction of the rotary shaft differs according to an axial directional position of the rotary shaft, as in claim 19.
- The interval ratio of the time for detection of the reference mark until detection of the measuring mark to the time it takes for one rotation of

the rotary shaft as determined by the at least one sensor, as in claims 15 and 30.

Itoh et al. teaches a tensile testing system that comprises markings as in elements 44 which are monitored to detect the elongation of a specimen 40 in which the length of the specimen that undergoes distention in which a ratio computing circuit is utilized for said purpose (Col. 32, lines 40-43) for the means of comparison and for determining a variation in elongation or distance.

Matsuda et al. clearly discloses the use of a computer device as in element 7, which is inherently operable to determine changes in interval ratios, since it is well known in the art that computers are capable of performing mathematical manipulations of data. Matsuda et al. also discloses the use of a reference mark as in element 3 that is arranged in a similar manner when contrasted to the reference mark disclosed in Figure 5 as submitted by the applicant, and a mark as in element 2 that resembles applicant's groove 20 since they are both inclined in a similar manner towards the axis of the shaft, such that it could be concluded that the interval between said marks 2 and 3 differ according to an axial directional position of the rotary shaft.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the axial elongation measurement system of Matsuda et al. using the teachings of the tensile testing system of Itoh et al. by determining a length by means of determining variations in the ratio of pulses to obtain length or distance measurements since this only involves a mathematical manipulation of data that are well known in the art, and it has been disclosed that if the "acts" of a

claimed process manipulate only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. Schrader, 22 F.3d at 294-95, 30 USPQ2d at 1458-59. Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process.

Claims 20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Itoh et al. as applied to claims 18 and 19 above, and further in view of Hochstein (Pat. 4,712,432). Matsuda et al. Teaches the claimed invention, except for:

- Said marks being two grooves provided in a "V" shape, as in claim 20.
- Said measuring mark being a groove provided in a spiral shape, as in claim 25.

Hochstein et al. teaches a shaft as in element 34 that has a pair of slots or grooves as in elements 38 and 40 oriented in a "V" shape as noted in Figure 3.

Since a change in the shape of a known element in a known apparatus merely constitutes obvious design choice, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the axial elongation measuring apparatus of Matsuda et al. using the teachings of Hochstein et al. by modifying the shape of the makings or grooves making them in the shape of a "V" or having a spiral shape for the purpose of experimentally determining a shape of said

grooves that would allow said measurements to be made therefore making said apparatus versatile and reliable.

Claims 21-24, 26, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Itoh et al. as applied to claims 18 and 19 above, and further in view of Savage et al. (Pat. 5,315,881). Matsuda et al. teaches the claimed invention, except for:

- Said two marks being two wire members fitted in a turned "V" shape, as in claim 22.
- Said measuring mark being a wire member fitted in a spiral shape, as in claim 27.
- Said sensor being an eddy current gap sensor, as in claims 21,23-24, 26, and 28-29.

Savage et al. teaches a sensor that is comprised by a shaft as in element 12 that has a pair of wires as in elements 20 fitted onto said shaft in a spiral shape, and pickup coils as in elements 22 and 24, as noted in Figure 1.

Since a change in the shape of a known element in a known apparatus merely constitutes obvious design choice, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the axial elongation measuring apparatus of Matsuda et al. using the teachings of Savage et al. by modifying the shape of the makings or wires making them in the shape of a "V" or having a spiral shape for the purpose of experimentally determining a shape of said wires that would allow said measurements to be made therefore making said apparatus

versatile and reliable. It would also have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the axial elongation measuring apparatus of Matsuda et al. using the teachings of Savage et al. by utilizing an induced current sensor to measure the variations in the magnetic field produced by the rotating shaft for the purpose of providing said measuring device with a sensor that is well known in the art and that would allow the necessary measurements to be obtained therefore making a measuring device that is versatile and reliable.

Claims 21,23-24, 26, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Itoh et al. as applied to claims 18 and 19 above, and further in view of Karim-Panahi et al. (Pat. 5,438,882). Matsuda et al. teaches the claimed invention, except for:

- A sensor that is a photoelectric sensor, as in claims 21,23-24, 26, and 28-29.

Karim-Panahi et al. teaches a rotating shaft sensor that comprises two photodetecting sensors as in elements 8 and 8' that produce variations in the phase difference of pulse trains.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the axial elongation measuring apparatus of Matsuda et al. using the teachings of the sensor of Karim-Panahi et al. by providing said measuring apparatus with photoelectric sensors for the purpose of providing said measuring device with a sensor that is well known in the art and that would allow the



necessary measurements to be obtained therefore making a measuring device that is versatile and reliable.

### ***Response to Arguments***

Applicant's arguments filed July 24, 2002 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., measuring the axial elongation of the shaft from a change in the interval ratio of the pulses generated and providing means for that purpose) are not recited in the originally rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants amendments raised new issues that made necessary the new art to be applied and therefore, the arguments presented against Matsuda et al. are said to be moot due to the new grounds of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilybett Martir whose telephone number is (703)305-6900. The examiner can normally be reached on 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Fuller can be reached on (703)308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3432 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

*LM*

Lilybett Martir  
Examiner  
Art Unit 2855

*RCM*

October 17, 2002

*MAX NOORI*  
MAX NOORI  
PRIMARY EXAMINER